

APR/FY06

**KUNIA FIELD STATION
Hawaii**

**Army Defense Environmental
Restoration Program
Installation Action Plan**

Final 20 September 2006

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Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multi-year Cleanup Program for an installation. The plan identifies environmental cleanup requirements at each site or area of concern, and proposes a comprehensive, installation-wide approach, with associated costs and schedules, to conduct investigations, necessary remedial actions.

In an effort to coordinate planning information between the restoration manager, US Army Environmental Center (USAEC), Kunia Field Station, Installation Management Agency-Pacific Regional Office (IMA-PRO), executing agencies, and regulatory agencies, an IAP was completed. The IAP is used to track requirements, schedules, and budgets for all major Army installation cleanup programs.

All site-specific funding and schedule information has been prepared according to projected overall Army funding levels and is, therefore, subject to change.

The following persons contributed to the formulation and completion of this Installation Action Plan during a planning workshop held on 24-27 April 2006:

Company/Installation/Branch

US Army Environmental Center

Booz Allen Hamilton for US Army Environmental Center

Engineering & Environment, Inc. for US Army Environmental Center

Engineering & Environment, Inc. for US Army Garrison Hawaii

US Army Garrison Hawaii

ICI for US Army Environmental Center

DIMCO for US Army Engineer Research and Development Center

State of Hawaii Department of Health, HEER Office

Acronyms & Abbreviations

AEDB-R	Army Environmental Database - Restoration
BRAC	Base Realignment & Closure Act
CTC	Cost-To-Complete
DA	Department of the Army
DERA	Defense Environmental Restoration Account (currently called ER,A)
DERP	Defense Environmental Restoration Program
DPW	Directorate of Public Works
EPA	Environmental Protection Agency
ER,A	Environmental Restoration, Army (formerly called DERA)
FSK	Field Station Kunia
IAP	Installation Action Plan
IMA-PARO	Installation Management Agency-Pacific Area Regional Office
IRA	Interim Remedial Action
IRP	Installation Restoration Program
LUST	Leaking Underground Storage Tank
MMRP	Military Munitions Response Program
NFA	No Further Action
NPL	National Priority List
PA	Preliminary Assessment
PCB	Polychlorinated Biphenyls
POL	Petroleum, Oil & Lubricants
RA	Remedial Action
RA(C)	Remedial Action - Construction
RA(O)	Remedial Action - Operation
RAB	Restoration Advisory Board
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
REM	Removal Action
RI	Remedial Investigation
RIP	Remedy in Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
SI	Site Inspection
SVOC	Semi-Volatile Organic Compounds
TAPP	Technical Assistance for Public Participation
TPH	Total Petroleum Hydrocarbons
TRC	Technical Review Committee
USAEC	United States Army Environmental Center
USAG-HI	U.S. Army Garrison - Hawaii
USATHAMA	U.S. Army Toxic and Hazardous Materials Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compounds

Installation Locale: The Kunia Field Station is located on the Schofield Plateau, approximately 850 feet above sea level on the island of Oahu. The facility is adjacent to Kunia Road, State Highway 750, approximately twenty miles northwest of the city of Honolulu. Agricultural lands (pineapple fields) operated by Del Monte Fresh Produce (Hawaii) Incorporated surrounds the installation to the west, south and north. The town of Kunia is approximately 1 mile to the south of the installation. Schofield Barracks is immediately to the north and Wheeler Army Airfield is across Kunia Road to the east.

Installation Mission: Kunia Field Station is leased to the Navy and is a naval center for communications throughout the Pacific Region.

Lead Organization:

Installation Management Agency, Pacific Region

Lead Executing Agency: US Army Corps of Engineers, Pacific Division

Regulatory Participation:

State: Hawaii Department of Health

National Priorities List (NPL) Status:

Non-NPL

Installation Restoration Advisory Board (RAB)/Technical Review Committee (TRC)/Technical Assistance for Public Participation (TAPP) Status: No

RAB/TRC/TAPP has been established at this time.

Installation Program Summaries

IRP

Primary Contaminants of Concern: POL

Affected Media of Concern: Soil, Surface Water

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 200509

Funding to Date (up to FY05): \$1,982.3K

Current Year Funding (FY06): \$ 0

Cost-to-Complete (FY07+): \$ 2,797K

Cleanup Program Summary

Installation Historic Activity: Kunia Field Station is an active US Army Garrison, Hawaii installation. The facility is located approximately 21 miles northwest of Honolulu and 1 mile to the south of Schofield Barracks in the north-central plateau of Oahu. The installation was constructed in 1943-1944 as an underground aircraft assembly facility. At the end of the war, the installation was placed in reserve status. After a transfer from the Air Force to the Navy, the installation was used for ammunition and torpedo storage, and was later (1958-1959) converted to the U.S. Pacific Fleet Operations and Control Center. In 1981, Kunia was transferred to the Army and became part of the US communications network providing rapid and secure radio relay communications for defense. This facility currently serves as a tri-services communications complex. Maintenance of the facility has changed in the FY97 from the Army to the Navy.

Program Progress:

IRP: To obtain site closure, the Army has been in negotiations with the State of Hawaii Department of Health. As part of these negotiations it was evaluated that a plastic liner would be placed over a former tank excavation to prevent infiltrating water from reaching the regional groundwater below. Regional groundwater is estimated to be approximately 600 feet below ground surface. However, in a final bid to avoid construction of the liner, permeability tests were conducted in April 2005 to evaluate if the natural soils permeability was low enough to preclude installation of the liner. Permeability tests showed that soil permeability was too high, necessitating the installation of the liner."

Construction of the liner began in August, 2005 after negotiations on security issues were resolved.

The US Army has completed construction of a remedial cap over approximately 14,000 square feet of soil containing residual concentrations of petroleum compounds associated with a former underground storage tank at the project site. Work was completed in accordance with the approved design drawings and the Remedial Action Work Plan for the project. This Remedial Action Report provides documentation of the construction activities and conveys the final As-Built drawings for the cap system.

The completed cap system includes a 40-mil high density polyethylene impermeable liner, a geotextile drainage mat, subsurface drainage piping, protective fill, topsoil, and a vegetative layer. The cap system appears to have functioned effectively through much of the 2005/2006 rainy season.

Routine maintenance inside the security fence will be performed by the using agency, and maintenance outside the fence will be coordinated by the US Army Garrison Hawaii Department of Public Works.

Final site inspection has been conducted, and this site is pending final closure from the State of Hawaii Department of Health.

KUNIA FIELD STATION

Installation Restoration Program

Total AEDB-R IRP Sites/AEDB-R Sites with Response Complete: 3/2

Different Site Types:

1 Maintenance Yard
1 Spill Site Area
1 Soil Contamination after Tank Removal

Most Widespread Contaminants of Concern: POL

Media Of Concern: Groundwater, Soil, Surface Water

Completed Removal (REM)/Interim Remedial Action (IRA)/Remedial Action (RA):

UST removal (FY95-96) Cost: \$591K
IRA at 1 site

Total IRP Funding

Prior Years (up to FY05):	\$1,982.3K
Current Year Funding (FY06):	\$ 0.0K
Future Requirements (FY07+):	\$ 2,797K
Total:	\$4,779.3K

Duration of IRP

Year of IRP Inception: 1991
Year of IRP RIP/RC: 200509
Year of IRP Completion including Long-Term Management (LTM): 203609

IRP Contamination Assessment Overview

In August 1990 the US Army Toxic and Hazardous Material Agency (USATHAMA) conducted an assessment to establish baseline data for potential waste sites. Waste sites were broadly defined as locations from which hazardous constituents might be released into the environment, regardless whether the material is solid or hazardous. The report identified seven potential waste sites including a 305,000 gallon concrete diesel UST, and a drum storage area.

In June 1994, the US Army Environmental Hygiene Agency conducted a Preliminary Assessment (PA) on the sites identified in the USATHAMA Waste Characterization Study. The purpose was to “determine the potential threat to human health and the environment and to identify eligibility for DERA funding.” Sites requiring a Site Investigation would be DERA eligible. The PA concluded that only the 305,000-gallon diesel UST posed an “environmental problem.”

In 1991 several pad-mounted transformers located within the tunnel complex were drained and removed by Unitek Environmental Services under subcontract to Fritz of Hawaii. Approximately fifteen, 30 year old transformers were removed from service.

A Preliminary Assessment/Site Investigation was initiated in 1993 to follow up on allegations of application of waste oils, including Polychlorinated Biphenyls (PCBs) on the surficial soils in the vicinity of the present building 25 site. This practice was discontinued around 1976 after the site was placed on caretaker status. The waste oil primarily consisted of sludge wastes from facility generators and oil purifiers. However, some waste electrical equipment oil, which potentially contained PCBs, may have been occasionally mixed with the used waste oil before application. The investigation found two PCB and lead contamination “hotspots” that were likely isolated occurrences and recommended confirmation samples.

A follow-up sampling and analysis was conducted at “two hotspots” found during the PA/SI at building 25 and the Microwave Tower. This follow-up investigation found no threat to human health or the environment at the site and no further remedial action was recommended.

The 305,000-gallon concrete diesel tank was removed during 1993-1994. The concrete walls of the tank itself were found to have elevated levels of TPH as diesel. The concrete was crushed then thermally treated. Soil surrounding and below the tank and piping was also found to be grossly contaminated with diesel, as defined by Department of Health guidance. Attempts to define the extent of contamination were not successful due to physical constraints. However, an interim remedial action to remove 3,429 cubic yards of grossly contaminated soil was conducted in 1995. This soil was thermally treated upon excavation. The excavation site boundaries remain grossly contaminated as confirmed with olfactory, visual, and analytical evidence. A remedial investigation to determine extent and characterize the contaminants was completed in FY01.

To obtain site closure, the Army has been in negotiations with the State of Hawaii Department of Health. As part of these negotiations it was evaluated that a plastic liner would be placed over a former tank excavation to prevent infiltrating water from reaching the regional groundwater below. Regional groundwater is estimated to be approximately 600 feet below ground surface. However, in a final bid to avoid construction of the liner, permeability tests were conducted in April 2005 to evaluate if the natural soils permeability was low enough to preclude installation of the liner. Permeability tests showed that soil permeability was too high, necessitating the installation of the liner.

Construction of the liner began in August, 2005 after negotiations on security issues were resolved. Final construction was completed in September 2005. Long term monitoring is required as part of this project.

Cleanup Exit Strategy:

All sites are RC.

1990

- Waste Site Characterization Study, U.S. Army Property Waste Site Summary Category 6, U.S. Army Reserve Centers, Volume 21. Prepared by Roy F. Weston, Inc., August 10, 1990.

1994

- Site Assessment No. 38-26-K28U-94, Waste Sites at Army Properties, Hawaii. Prepared for USARPAC and USAG-HI, by U.S. Army Environmental Hygiene Agency, June 14, 1994.
- Preliminary Assessment/Site Investigation Report, Kunia Field Station, Oahu, Hawaii. Prepared for Department of Army, U.S. Army Engineer District, Honolulu, by Wil Chee Planning and SCS Engineers, February 1994.

1995

- Site Investigation Report, Microwave Tower and Building 25, Kunia Field Station, Oahu, Hawaii. Prepared by U.S. Army Corps of Engineers, Pacific Ocean Division, Environmental Division, Hazardous Toxic Waste Branch, May 1995.

1996

- Site Characterization, Remedial Design, and Remediation of Petroleum-Contaminated Soil at Four U.S. Army Installations on Oahu, Hawaii, Underground Storage Tank Final Closure Report. Prepared for RCIE Environmental, Inc., the U.S. Army Corps of Engineers, and the U.S. Army Garrison, Hawaii by PRC Environmental Management, Inc., July 8, 1996.

1996

- Site Characterization, Remedial Design, and Remediation of Petroleum-Contaminated Soil at Four U.S. Army Installations on Oahu, Hawaii, Final Engineering Evaluation Report. Prepared for RCIE Environmental, Inc., the U.S. Army Corps of Engineers, and the U.S. Army Garrison, Hawaii by PRC Environmental Management, Inc., June 16, 1996.

2000

- Remedial Investigation Report, Kunia Field Station, Oahu, Hawaii. Prepared by Wil Chee-Planning, Inc./Brewer Environmental Services, September 29, 2000.
- Human Health and Ecological Risk Assessment, Kunia Field Station, Oahu, Hawaii. Prepared by Wil Chee Planning Inc. October 2000.

2006

- Remedial Design and Installation of Remedial Cap, Kunia Field Station, Oahu, Hawaii, January, 2006. Prepared by: Dawson Group, Inc, prepared for: U.S. Army Engineer District, Honolulu.

LUST REMEDIATION (305K GAL TK) (Page 1 of 2)**SITE DESCRIPTION**

Kunia Field Station was built during World War II and was originally used as an aircraft assembly plant. The installation was later transformed into a communication facility and is active as such to this date. The station formerly housed a 305,000-gallon capacity underground storage tank (UST). This tank failed a tank tightness test in 1991 and was subsequently removed in April and May of 1994. The UST had stored diesel fuel. Prior to removal of the UST, Clayton Environmental Consultants advanced eight borings at the periphery of the concrete UST to collect soil samples for laboratory analysis. Analytical results revealed the presence of volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) in the samples collected, albeit at concentrations below the Hawaii Department of Health (HDOH) cleanup guidelines in effect at the time.

PRC Environmental Management, Inc. conducted a post-removal investigation of subsurface soil within and around the footprint of the former UST in June and July 1994. On-site and off-site analysis of soil samples collected during the investigation revealed the presence of petroleum hydrocarbons and VOCs and SVOCs. However, the concentration of contaminants, including Total Petroleum Hydrocarbons (TPH) as diesel and benzo[a]pyrene, exceeded the respective Tier 1 SALs.

Brewer Environmental Services, under subcontract to Will Chee – Planning, Inc., performed a remedial investigation of the leaking UST site from March to June 1999 to further delineate the horizontal and vertical extent of contamination resulting from the subject tank. During that period, 16 soil borings were advanced to a maximum depth of 250 feet below ground surface (bgs). Diesel concentrations in several collected soil samples exceeded the Tier 1 SAL. Using that data, Brewer Environmental Services estimated the contaminant plume to be of an elongated configuration, oriented from north to south, and extending to approximately 50 feet laterally from the former UST footprint and 250 feet bgs. Results of that investigation initiated risk-based human health and ecological evaluations and the remedial action work. Soil beneath and surrounding the UST was found to be contaminated with diesel fuel. Contamination extended to such depth that removal was determined to be infeasible. Construction of the remedial cap system to prevent exposure to soil and to minimize infiltration of rainwater was selected as the

STATUS

REGULATORY DRIVER: Other (State)

RRSE: High

CONTAMINANTS OF CONCERN: POL

MEDIA OF CONCERN: Groundwater, Soil

PHASES	Start	End
PA.....	199310	199402
SI	199310	199402
RI/FS	199809	200107
IRA.....	199403	199607
RD	199804	200505
RA(C).....	200505	200509
LTM	200606	203606

RC: 200509

LUST REMEDIATION (305K GAL TK) (Page 2 of 2)

remedial approach in partnership between the US Army Garrison Hawaii Department of Public Works (DPW) and HDOH.

CLEANUP STRATEGY

The Cap was installed in FY05. No further remedial actions are planned. Implement LUC to restrict digging and a Response Action Memorandum (Decision Document). LTM consisting of Cap maintenance, five year reviews, and LUC will be administered indefinitely.

IRP No Further Action Sites Summary

AEDB-R #	Site Title	Documentation/Reason for NFA	NFA Date
FSK-02	Bldg 25, PCB Contamination	Study Complete – No cleanup required	199605
FSK-03	Microwave Tower	Study Complete – No Cleanup required	199605

Initiation of IRP: 1991

Past Phase Completion Milestones

1993

PA/SI Initiated (FSK-02, -03)	Mar 93
REM Initiated (FSK-01)	Jun 93

1994

IRA Initiated (FSK-01)	Jun 94
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1995

REM Completed (FSK-01)	Jan 95
PA/SI Completed (FSK-02, -03)	May 95

1996

IRA - (FSK-01) Complete	Jul 96
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1998

RI Initiated (FSK-01)	Aug 98
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2001

RI Completed (FSK-01)	Jul 01
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2002

RA Initiated (FSK-01)	Apr 02
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Projected Record of Decision (ROD)/Decision Document (DD) Approval Dates:
FY07

Projected Construction Completion Date of IRP and Removal from NPL: All sites are RC.

Schedule for Next Five Year Review: FY10

Estimated Completion Date of IRP (including LTM phase): Indefinitely

KUNIA FIELD STATION IAP SCHEDULE

(Based on current funding)

AEDBR#	PHASE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
FSK-01	LTM									203606

Prior Years Funds

Total Funding up to FY04: \$1,389K

Site Information	Expenditures	FY Total
FY05 RAC, FSK-01		\$59,340

Total Prior Year Funding: \$1,982.3K

Current Year Requirements

Year	Site Information	Expenditures	FY Total
FY06			\$ 0K

Total Future Requirements: \$ 2,797K

Total IR Program Cost (from inception to completion of the IRP): \$ 4,779.3K

Previous efforts at forming a RAB at adjacent Schofield Barracks have not proven to show sufficient interest in formation of a RAB at Kunia Field Station.